

ABSTRACT

An apparatus for controlling the substrate temperature of a substrate during processing of the substrate at a process energy. A chuck temperature input receives temperature measurements from temperature sensors at a substrate chuck, and a temperature set point input receives temperature set points. The temperature set points 5 define a range of temperatures within which the apparatus maintains the substrate temperature. A chuck temperature controller output sends control signals to a chuck temperature controller, which signals are operable to selectively increase and decrease the chuck temperature. A process energy output sends control signals that are operable to selectively increase and decrease the process energy during the processing of the 10 substrate. A controller compares the temperature measurements received from the temperature sensors at the substrate chuck through the chuck temperature input to the temperature set points received through the temperature set point input. The controller sends control signals through the chuck temperature controller output to the chuck temperature controller to selectively decrease the chuck temperature when the 15 temperature measurements received from the temperature sensors at the substrate chuck are above the temperature set points. The controller further sends control signals through the process energy output to selectively decrease the process energy when the temperature measurements received from the temperature sensors at the substrate chuck are above the temperature set point. Preferably, the controller first sends control signals 20 through the chuck temperature controller output to control the chuck temperature, and only sends control signals through the process energy output when the chuck temperature cannot be sufficiently controlled by the chuck temperature controller.